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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,607	09/21/2006	Takeo Yajima	4724-0038WOUS	1929
35301 7590 09/28/2009 MCCORMICK, PAULDING & HUBER LLP CITY PLACE II 185 ASYLUM STREET HARTFORD, CT 06103				
EXAMINER HILTON, ALBERT				
ART UNIT		PAPER NUMBER		
4171				
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09/28/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/593,607

**Applicant(s)**

YAJIMA, TAKEO

**Examiner**

Albert Hilton

**Art Unit**

4171

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 9-21-2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CIS/IC)
- Paper No(s)/Mail Date 9/21/2006, 6/03/2009 and 6/18/2009.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_



### DETAILED ACTION

1. This is a first office action.
2. Claims 1-8 are pending.

### *Drawings*

3. Figure 8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1 rejected under 35 U.S.C. 102(b) as being anticipated by YAJIMA (US Patent No. 6,539,986).
6. YAJIMA discloses a chemical supply apparatus comprising a nozzle assembly (13); a primary and secondary flow path (**inflow passage 7** and **discharge passage 14**, respectively) connected to said nozzle; a primary valve (**side valve 8**) for opening

the primary flow path that communicates with an external connection port (connection between **inflow passage 7** and **storage tank 6** in Fig. 1) ; a secondary valve (**discharge side valve 15**) for opening a secondary flow path that connects to said nozzle (connection between **discharge passage 14** and **13** in Fig. 1); and a pump (**1**) between the primary and secondary flow paths (YAJIMA: paragraphs 32-33, 40-41 and Figure 4). The pump disclosed in YAJIMA is a bellows-type pump whose volume is changed by a fluid-pressure actuator, resulting in liquid being sucked into, or discharged from, the pump (YAJIMA: paragraph 6).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-5 and 8 rejected under 35 U.S.C. 103(a) as being unpatentable over YAJIMA in light of KAWATA (US Patent No. 4,932,353).

9. Regarding claim 2, YAJIMA describes a chemical dispensing apparatus that meets all the limitations of claim 1, but does not disclose the use of a double-tube to regulate the temperature of the chemical liquid being dispensed. However, KAWATA discloses a chemical-dispensing apparatus having a heat exchanger (**10, 11**) consisting of an inner tube (**pipe 9**) through which the chemical (**5**) flows, and an outer tube (**10, 11**) through which temperature-regulated water (**7**) flows (KAWATA, column 2, line 60 to column 3, line 13). Furthermore, KAWATA teaches that the temperature of the

deposited resist fluid in a dispensing apparatus affects the resulting film thickness, and that when the temperature of the resist liquid is carefully controlled with a double-tube heat exchanger, the film uniformity is improved (KAWATA, column 1, lines 35-54). One of ordinary skill in the art, motivated by a need to precisely control the thickness of a deposited film, would have found it obvious to improve upon the apparatus described in YAJIMA by substituting the double tube component of KAWATA for the single tube of YAJIMA.<sup>7</sup>

10. Regarding claim 3, the chemical dispensing apparatus described in YAJIMA comprises a pump that contains an external tube through which the dispensed chemical flows, making the pump a part of the chemical flow path. The addition of the heat exchanger described in KAWATA to the chemical flow path of the apparatus described in YAJIMA would result in an apparatus with a temperature control flow path disposed around the pump. Such an apparatus would therefore meet all of the limitations specified in claim 3.

11. Regarding claim 4, the pump described in YAJIMA is formed from a tube-shaped flexible film (**elastically deformable pump**), with one end of the tube in communication with a primary flow path (**inflow passage 7**) and the other end of the tube in communication with the secondary flow path (**discharge passage 14**). Chemicals are sucked into the pump and dispensed from the pump in YAJIMA by the expansion and contraction of the flexible film (YAJIMA, column 23, lines 27-47). The addition of the heat exchanger described in KAWATA to chemical dispensing apparatus described in

YAJIMA would result in an apparatus that meets all of the limitations specified in claim 4.

12. Regarding claim 5, YAJIMA discloses a flexible film (**elastically deformable pump**) in a driving room (**pump chamber**) filled with a driving medium (either air or water YAJIMA, column 4, lines 38-40), thereby allowing the volume of the film to be changed by increasing or decreasing the pressure of the driving medium (YAJIMA, column 1, lines 32-69). The addition of a heat exchanger as described in KAWATA to a dispensing apparatus as described in YAJIMA would therefore meet all the limitations of claim 5.

13. Claims 6-7 rejected under 35 U.S.C. 103(a) as being unpatentable over YAJIMA in light of KAWATA and KAWANO (US Patent No, 6,258,167). As noted above, the addition of a heat exchanger as described in KAWATA to a dispensing apparatus as described in YAJIMA meets the limitations of claim 5, but does not disclose a movable arm connected to the nozzle assembly. However, KAWANO discloses a chemical supply apparatus having a nozzle assembly (**20**) attached to a movable arm (**movable member 34**) (KAWANO, column 1, lines 48-50, and KAWANO, Figures 4 and 6). KAWANO teaches that using a movable arm to deposit material in a coating apparatus to coat the entire length of a substrate and to maintain a constant height above the substrate results in a coating film having uniform thickness. (KAWANO, column 4, lines 37-45 and column 5, lines 1-10). One of ordinary skill in the art, motivated by a need to precisely control the thickness of a deposited film, would have found it obvious to

improve upon the apparatus described in YAJIMA by placing the dispensing pump of YAJIMA inside a movable arm.

14. Regarding claim 7, YAJIMA does not specify whether or not the driving mechanism is located at the arm. Therefore, under the broadest reasonable interpretation of the disclosure, YAJIMA meets the limitation of claim 7.

15. Claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over YAJIMA in light of KAWATA (US Patent No. 4,932,353). YAJIMA discloses a flexible film (**pump chamber**) that can be driven by compressing the flexible film using either air or an incompressible fluid: "The driving section 5 may be driven by a hydropneumatic cylinder such as an air cylinder, a hydraulic cylinder or the like." (YAJIMA, column4, lines 38-40). The addition of a heat exchanger as described in KAWATA to a dispensing apparatus as described in YAJIMA would therefore meet all the limitations of claim 8.

### ***Conclusion***

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert Hilton whose telephone number is (571)-270-5519. The examiner can normally be reached on Monday through Friday with alternate Fridays off, 8:00-4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Barbara Gilliam can be reached on 571-272-1330. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Albert Hilton  
Examiner  
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/Barbara L. Gilliam/  
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